

## FOREST INSECT CONDITIONS ON THE

### BOISE NATIONAL FOREST, 1966

The following report depicts major forest insect problems encountered on the Boise National Forest during 1966. Information for the report was accumulated from aerial detection flights and on-the-ground biological evaluations. In the latter case, many of the evaluations were aided by reports from your staff submitted on the Forest Pest Detection Field Report cards.

Several areas of forest insect activity were located on the forest, and for the most part, were considered endemic in nature. Bark beetle activity increased in certain timber types with Ips beetles taking a sharp upward swing. Mountain pine beetle infestations on federal lands were primarily confined to relatively small groups of attacked trees. The epidemic of mountain pine beetle, bordering forest lands southeast of Cascade, is causing continuing losses to second growth ponderosa pine. So far this infestation has not extended on to forest lands. Douglas-fir beetle activity occurred mainly as widely scattered group infestations. The persistent epidemic population of spruce budworm decreased slightly in total acres affected. Also, the character of the infestation changed from heavy to light defoliation. Defoliator activity other than the spruce budworm was limited to tussock moths feeding on Cacanthus sp. and ponderosa pines in the Town Creek plantation area. A more detailed discussion of these problems follows:

#### IPS (Many Species)

The past field season was characterized with protracted periods of high temperatures, low humidity, and below normal amounts of precipitation. Under these conditions Ips beetles have the ability to build up rapidly and in some cases can become epidemic.

During the summer and late fall increasing numbers of Ips were noted where suitable host material was available. In Bannock Creek, Boise Basin Experimental Forest, several large groups of faded ponderosa pines were found this fall. Trees had been attacked earlier in the summer, probably by first generation beetles, and did not fade until mid-September. This occurred after aerial detection flights had been completed. Therefore, many Ips attacks went undetected. When this situation was brought to light, a "quickie" survey was flown and large groups of faders were found in the following areas: Illinois Gulch, Hahn Gulch, Hoodoo Creek, Clear Creek, Meadow Creek, Bannock Creek, Idaho City, D-3; Pyle Creek, Wet Foot Creek, Anderson Creek, Garden Valley, D-7; Buck Creek (some on adjacent State land) Cottonwood Creek,

Second Fork, Saguen Basin, Hamett, D-6. Time and work schedules were such that no flights were made over the Mountain Home District. However, detection reports from that district indicate Ips activity in Cow Creek and Wagon Town Creek.

Almost without exception, affected trees were adjacent to or in areas that had been logged or thinned during the past two years. The slash and thinning debris provided a suitable host for the beetles to build up in. This, coupled with almost optimum weather conditions for brood development made for explosive development of the pests.

On occasion, similar conditions have produced outbreaks of this type in past years. Usually the damage is confined to one or two years activity -- then populations drop off rapidly. If weather conditions next year are similar to those of this year, it is expected that Ips activity will continue. The degree of development will in most cases be dependent on the amount of slash and thinning debris available for the beetles to build up in. In summary, it is felt that this year's explosive Ips populations resulted from optimum weather conditions for development, coupled with large populations that had the opportunity to build up in logging slash and thinned trees.

#### MOUNTAIN PINE BEETLE, *Dendroctonus ponderosae* Hopk.

In last year's report, mention was made of the mountain pine beetle infestation in second growth ponderosa pine southeast of Cascade. We feel it is timely to keep you up-to-date on this infestation due to its proximity to forest lands. Aerial detection surveys this year revealed that the infestation has spread slightly to the southeast, and approximately 3,000 trees were faded. Ground evaluations this fall showed brood counts averaging 120 per square foot. During the evaluations it was observed that broods had developed so rapidly that partial adult emergence had occurred. This was the first time this phenomenon has been encountered in this general area. The only plausible explanation for this is that optimum weather conditions must have greatly accelerated brood development. Thus, the abnormal occurrence of adults emerging the same year that attacks were made. There is a possibility that this year's adult emergency will reduce the total number of adults that will attack in 1967. If this holds true there is a good possibility that the infestation may start a downward trend.

Elsewhere, on or near the forest, mountain pine beetle activity has been confined to fairly small, group type, outbreaks. The Castle Creek infestation, D-1, increased slightly this year. However, this fall's brood counts were fairly low, averaging 90 larvae per square foot of bark surface. This infestation is expected to remain at about its current level of activity through next year.

DOUGLAS-FIR BEETLE, *Dendroctonus pseudotsugae* (Hopk.)

For the most part, Douglas-fir beetle attacks are at about the same level as last year. Many group type infestation centers were observed during detection flights this summer and fall. These groups have newly faded trees occurring near them and fading ratios averaged one-to-one. No large epidemic centers were found.

At the Bogus Basin ski area several new runs have been cleared during the past two years. Felled trees were attacked by the beetle and by late summer relatively heavy broods were found. The area operator, through coordination with the District Ranger, was advised to burn or treat the infested material. Approximately 90 per cent of the infested logs have been burned. Remaining logs were scheduled for treatment with E.D.B. Inclement weather and man power shortages at the ski area interfered with the schedule and no treating was done. The remaining infested material is scheduled for treating this coming spring.

SPRUCE BUDWORM, *Choristoneura fumiferana* Clem.

For several years populations of the spruce budworm have persisted in the wilderness area of the forest along the Middle Fork of the Salmon River. Douglas-fir and true fir have been defoliated to varying degrees and last year (1965) tree mortality was observed from Marble Creek downstream to Norton Ridge. Tree killing was most pronounced in reproduction pole sized trees. The mortality occurred in a spotty or patchy, configuration.

Aerial detection flights this year showed that the infestation had decreased slightly in size, from 60,200 acres in 1965 to 59,400 acres. The most significant happening to these populations occurred as an overall reduction in total numbers. This was first detected when the aerial survey flights disclosed that 55,800 acres were classed as light. The remaining 2,600 acres were moderately defoliated. Last year the entire 60,200 acres were heavily defoliated. Ground checks showed that larval populations were definitely down from what were observed in 1965.

The decided downward trend in budworm activity coincided with conditions observed on the bordering Challis, Payette, and Salmon forests where populations had also dropped off during the past year. The reasons for reductions in budworm activity have pretty well been narrowed to effects of adverse weather. There are two periods in this pest's life cycle where the larvae are highly susceptible to the effects of cold weather: First, when the tiny larvae hatch from the egg and start crawling to their winter hibernaculum sites; second, when the larvae leave the hibernaculae in late spring and start



searching for new buds which they mine. Coincident with these developmental times in the insects life cycle, periods of hard freezes were experienced in the fall (1965) and spring (1966). It is felt that these freezes were primarily responsible for the current population reductions. Also, there was undoubtedly a supplementary impact on the budworm from native predator-parasite complexes that have been associated with the populations for a considerable period of time.

Even though the total number of budworm larvae were reduced, surviving residual populations are still present. These individuals are considered a "biological reservoir" and have the potential to cause reinfestation, if biological and climatological factors are suitable for their development.

In summary, budworm populations have been slowed down due to adverse weather conditions affecting the critical stages of development. Also, native predators and parasites have added impetus to the reduction in total numbers of the pest. Adverse weather conditions are extremely helpful when they occur, but cannot be counted on from year to year. It is felt that the fir stands, heavily damaged in the past, will have at least one season to partially recuperate.

#### TUSsock MOTH, Hemarocampa Sp.

*defoliation?*  
*light defoliation*  
Tussock moths defoliating Ceanothus sp. have been active in Town Creek plantation for eight years. Population levels have varied from year to year with fluctuations being primarily governed by the influences of a polyhedral virus and a native egg parasite. Last year defoliation occurred mostly to Ceanothus sp. with very light feeding noted on young ponderosa pines. This past field season Ceanothus sp. was fed on heavily in a spotty pattern. Near these spots ponderosa pines received light to moderate damage. This occurred mainly in the lower half of the trees crowns. Even though feeding on ponderosa pines was not excessively heavy, it constituted the most damage that has been observed since 1959. Egg mass counts this fall are at about the same level as last year, 4 to 6 per bush. Increased damage from last year (1965) to the present time can probably be attributed to a reduction in natural control factors.

With any insect infestation it is most difficult to consistently predict its course of action for the forthcoming year. In this case, natural control agents such as egg parasites, adverse climatological conditions and the polyhedral virus could hold in check or reduce the populations to a low level. On the other hand, the aforementioned factors might not be as pronounced as they have in the past. If this happens existing populations could increase to epidemic proportions and suppression would become necessary to protect the pine plantations.

Jerry A. E. Knopf      Entomologist